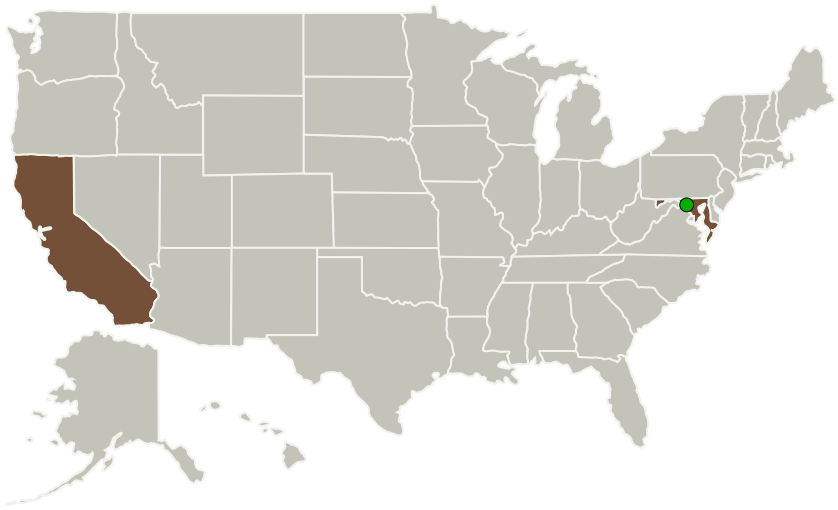
# Interferometric Star Tracker, Phase I

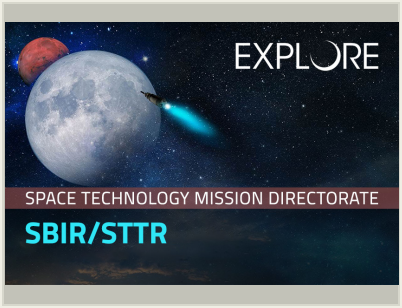
Completed Technology Project (2014 - 2014)

## Project Introduction

Optical Physics Company (OPC) proposes to develop a high accuracy version of its interferometric star tracker capable of meeting the milli-arcsecond-level pointing requirements. Such high accuracy tracker can be used for precision pointing of the large telescope, and can permit open-loop pointing of narrow-beam laser signals. The latter can enable deep-space lasercom missions without the technical and operational complexity of a ground based beacon. OPC has already built multiple versions of this star tracker for several applications for various DoD customers. Current technical maturity of the star tracker is TRL 5- which is expected to advance to TRL 6 during the proposed Phase I project due to space readiness and flight tests under parallel efforts. During the proposed Phase I effort, OPC will first develop requirements. This will be followed by design trades and formulation of a detailed design. Phase I will conclude with a Preliminary Design Review (PDR). During Phase II, the design will be advanced to the Critical Design Review (CDR) level and a prototype will be built and tested. Given that the existing baseline designs for OPC's visible and SWIR band interferometric star trackers are at TRL 5, OPC has a head start.

## Primary U.S. Work Locations and Key Partners



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| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| Optical Physics Company | Lead Organization | Industry | Calabasas, California |
| Goddard Space Flight Center(GSFC) | Supporting Organization | NASA Center | Greenbelt, Maryland |

| Primary U.S. Work Locations | |
|---|---|
| California | Maryland |

## Project Transitions

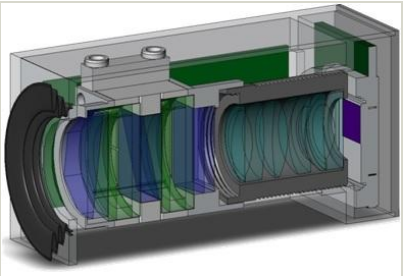
**June 2014:** Project Start

**December 2014:** Closed out

**Closeout Documentation:**

- Final Summary Chart*(https://techport.nasa.gov/file/140598)*

## Images



**Briefing Chart**
Interferometric Star Tracker, Phase I
*(https://techport.nasa.gov/image/130206)*

## Organizational Responsibility

**Responsible Mission Directorate:**
Space Technology Mission Directorate (STMD)

**Lead Organization:**
Optical Physics Company

**Responsible Program:**
Small Business Innovation Research/Small Business Tech Transfer

## Project Management

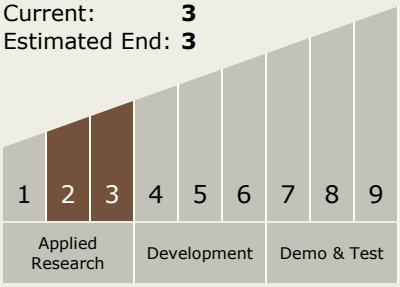
**Program Director:**
Jason L Kessler

**Program Manager:**
Carlos Torrez

**Principal Investigator:**
Chien C Chen

## Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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## Technology Areas

**Primary:**

- TX17 Guidance, Navigation, and Control (GN&C)
  - TX17.2 Navigation Technologies
    - TX17.2.3 Navigation Sensors

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System